

ALEX S. GARDNER

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PROFESSIONAL EXPERIENCE

Scientist, Solid Earth Group, Earth Science Section
Jet Propulsion Laboratory/California Institute of Technology (2014-present)

Assistant Professor, Graduate School of Geography
Clark University (2012-2014)

Research Assistant Professor, George Perkins Marsh Institute
Clark University (2012-2014)

NSERC Research Fellow, Department of Atmospheric, Oceanic and Space Sciences
University of Michigan (2010-2012).

EDUCATION

Ph.D. (August 2010)
Department of Earth and Atmospheric Sciences, University of Alberta
Dissertation title: *Surface mass balance of Arctic glaciers: Climate influences and modelling approaches*

B. Eng., Great Distinction (May 2005)
Department of Civil Engineering, University of Saskatchewan
Awarded the Civil Engineering Alumni Medal for graduating first in class.

AWARDS (SELECTED)

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| 2009/10 | • NSERC Postdoctoral Fellowship | \$80,000 over 2 yrs. |
| 2008/09 | • A. Stewart Memorial Graduate Prize (Awarded to top 25 University of Alberta PhD candidates) | \$5,000 |
| 2006/07 | • NSERC Alexander Graham Bell Canada Graduate Scholarship D | \$105,000 over 3 yrs. |
| | • Alberta Ingenuity Student Scholarship | \$110,000 over 5 yrs. |
| | • Dr. Roy Dean Hibbs memorial scholarship | \$1,000 |
| 2005/06 | • NSERC Canada Graduate Scholarship M | \$21,000 |
| | • Walter H Johns Graduate Fellowship | \$19,000 over 4 yrs. |
| 2004/05 | • Civil Engineering Alumni Medal (Top Civil Engineering Graduate) | Medal |

PUBLICATIONS (REFEREED)

- Flanner, M. G., **A. S. Gardner**, S. Eckhardt, A. Stohl, and J. Perket, 2014: Aerosol radiative forcing from the 2010 Eyjafjallajökull volcanic eruptions. *Journal of Geophysical Research: Atmospheres*, AOP.
- Pfeffer, W.T., Arendt, A.A., Bliss, A., Bolch, T., Cogley, J.G., **Gardner, A.S.**, Hagen, J.-O., Hock, R., Kaser, G., Kienholz, C., Miles, E.S., Moholdt, G., Moelg, N., Paul, F., Radic, V., Rastner, P., Raup, B., Rich, J., Sharp, M.J. and the Randolph Consortium, 2014. The Randolph Glacier Inventory: a globally complete inventory of glaciers. *Journal of Glaciology*, 60, 537-552.
- Donnellan, A., B. Bills, J.J. Green, R. Goullioud, S. Jones, R. Knight, M. Underhill, J. Goguen, E. M. De Jong, A. Ansar, T. Scambos, P. Morin, B. Hallet, L. Thompson, **A.S. Gardner**, J. Ekholm, 2014. Studying mountain glacier processes using a staring instrument. *Aerospace Conference, 2014 IEEE*, 1-17.
- Gardner, A.S.**, G. Moholdt, J.G. Cogley, B. Wouters, A.A. Arendt, J. Wahr, E. Berthier, R. Hock, W.T. Pfeffer, G. Kaser, S.R.M. Ligtenberg, T. Bolch, M.J. Sharp, J.O. Hagen, M.R. van den Broeke, and F. Paul, 2013: A reconciled estimate of glacier contributions to sea level rise: 2003 to 2009. *Science*, 340, 852-857. (**Featured Article**)
- IPCC. 2013. Working Group 1 Contribution to the IPCC Fifth Assessment Report (AR5), *Climate Change 2013: The Physical Science Basis*. Chapter 4: Observations: Cryosphere. Co-ordinating Lead Authors: D.G. Vaughan, J.C. Comiso; Lead Authors: I. Allison, J. Carrasco, G. Kaser, R. Kwok, P. Mote, T. Murray, F. Paul, J. Ren, E. Rignot, O. Solomina, K. Steffen, T. Zhang; Contributing Authors: A.A. Arendt, D.B. Bahr, M. van den Broeke, R. Brown, J.G. Cogley, **A.S. Gardner**, S. Gerland, S. Gruber, C. Haas, J.-O. Hagen, R. Hock, D. Holland, M. Huss, T. Markus, B. Marzeion, R. Massom, G. Moholdt, P.P. Overduin, A. Payne, W.T. Pfeffer, T. Prowse, V. Radic, D. Robinson, M. Sharp, K. Shiklomanov, S. Smith, S. Stammerjohn, I. Velicogna, P. Wadhams, A. Worby, L. Zhao. 102pp.
- IPCC. 2013. Working Group 1 Contribution to the IPCC Fifth Assessment Report (AR5), *Climate Change 2013: The Physical Science Basis*. Chapter 13: Sea Level Rise. Co-ordinating Lead Authors: J. A. Church, P.U. Clark; Lead Authors: A. Cazenave, J.M. Gregory, S. Jevrejeva, A. Levermann, M.A. Merrifield, G.A. Milne, R.S. Nerem, P.D. Nunn, A.J. Payne, W.T. Pfeffer, D. Stammer, A.S. Unnikrishnan; Contributing Authors: D. Bahr, J.E. Box, D.H. Bromwich, M. Carson, W. Collins, X. Fettweis, P. Forster, **A.S. Gardner**, W.R. Gehrels, R. Giesen, P.J. Gleckler, P. Good, R.G. Graversen, R. Greve, S. Griffies, E. Hanna, M. Hemer, R. Hock, S.J. Holgate, J. Hunter, P. Huybrechts, G. Johnson, I. Joughin, G. Kaser, C. Katsman, L. Konikow, G. Krinner, A. Le Brocq, J. Lenaerts, S. Ligtenberg, C.M. Little, B. Marzeion, K.L. McInnes, S.H. Mernild, D. Monselesan, R. Mottram, T. Murray, G. Myhre, J.P. Nicholas, F. Nick, M. Perrette, D. Pollard, V. Radić, J. Rae, M. Rummukainen, C. Schoof, A. Slangen, J.H. van Angelen, W.J. van de Berg, M. van den Broeke, M. Vizcaíno, Y. Wada, N.J. White, R. Winkelmann, J. Yin, M. Yoshimori, K. Zickfeld. 124pp.
- Arendt, A., Luthcke, S., **Gardner, A.S.**, O'neel, S., Hill, D., Moholdt, G., and Abdalati, W., 2013: Analysis of a GRACE global mascon Solution for Gulf of Alaska Glaciers, *Journal of Glaciology*, 59, 913-924.
- Lenaerts, J.T.M., J.H. van Angelen, M.R. van den Broeke, **A.S. Gardner**, B. Wouters, and E. van Meijgaard, 2013: Irreversible mass loss of Canadian Arctic Archipelago glaciers. *Geophysical Research Letters*, 40, 1-5.
- Gardner, A.S.**, G. Moholdt, A. Arendt, and B. Wouters, 2012: Accelerated contributions of Canada's Baffin and Bylot Island glaciers to sea level rise over the past half century, *The Cryosphere*, 6, 1103-1125, 10.5194/tc-6-1103-2012.

- Moholdt, G., B. Wouters, and **A.S. Gardner**, 2012: Recent mass changes of glaciers in the Russian High Arctic. *Geophysical Research Letters*, 39, L10502.
- Gardner, A.S.**, G. Moholdt, B. Wouters, G.J. Wolken, D.O. Burgess, M.J. Sharp, J.G. Cogley, C. Braun, and C. Labine, 2011: Sharply increased mass loss from glaciers and ice caps in the Canadian Arctic Archipelago, *Nature*, 473(7347), 357-360. **(Cover Feature)**
- Kuipers Munneke, P., M.R. van den Broeke, J.T.M. Lenaerts, M. G. Flanner, **A.S. Gardner**, and W.J. van de Berg, 2011: A new albedo parameterization for use in climate models over the Antarctic ice sheet. *Journal of Geophysical Research*, 116, D05114.
- Sharp, M., Burgess, D.O., Cawkwell, F., Copland, L., Davis, J.A., Dowdeswell, E.K., Dowdeswell, J.A., Gardner, A.S., Mair, D., Wang, L., Williamson, S.N., Wolken, G.J. and Wyatt, F., in press. Recent glacier changes in the Canadian Arctic. In *Global Land Ice Measurements from Space: Satellite Multispectral Imaging of Glaciers*. Kargel, J.S., Bishop, M.P., Kaab, A., Raup, B.H., and Leonard, G. Eds. Springer-Praxis. 20ms.
- Gardner, A.S.** and M.J. Sharp, 2010: A review of snow and ice albedo and the development of a new physically based broadband albedo parameterization. *Journal of Geophysical Research*, 115, F01009.
- Gardner, A.S.**, M.J. Sharp, R. M. Koerner, C. Labine, S. Boon, S. J. Marshall, D. O. Burgess, and D. Lewis, 2009: Near-surface temperature lapse rates over Arctic glaciers and their implications for temperature downscaling. *Journal of Climate*, 22, 4281-4298.
- Gardner, A.S.** and M.J. Sharp, 2009: Sensitivity of net mass balance estimates to near-surface temperature lapse rates when employing the degree-day method to estimate glacier melt. *Annals of Glaciology*, 50, 80-86.
- Gardner, A.S.** and M. Sharp, 2007: Influence of the Arctic Circumpolar Vortex on the mass balance of Canadian High Arctic glaciers. *Journal of Climate*, 20, 4586-4598.

PUBLICATIONS (OTHER)

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- Gardner, A.S.**, J.G. Cogley, E. Berthier, G. Kaser, 2013. Comment: Take more care over glacier facts. *Nature*, 504. 33-33.
- Arendt, A., Bolch, T., Cogley, J. G., **Gardner, A.S.**, Hagen, J.-O., Hock, R., Kaser, et al., 2012: Randolph Glacier Inventory: A Dataset of Global Glacier Outlines Version: 2.0, Global Land Ice Measurements from Space, Boulder Colorado, USA. Digital Media.

GRANTS (FUNDED)

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- | | |
|---|---------------|
| NASA Cryospheric Sciences (2014-2017) | \$900k |
| "Glaciology and Sea Level Rise Research" with Alex Gardner (PI, JPL) | |
| NASA Studies with ICESAT and CryoSat-2 (2013-2016) | \$134k |
| "Multiple Scattering Within Snow, Ice, Firn and Water and Its Impact on Elevation Retrievals from ICESat-2 Data" with Alex Gardner (PI, Clark University) and Mark Flanner (co-PI, University of Michigan) | |
| NASA Cryospheric Science (Selected) | \$368k |
| "Assessment of WorldView stereo imagery for use in measuring glacier volume change" with Alex Gardner (PI, Clark University) and Ian Howat (co-I, Ohio State University) | |

NASA Sea Level Rise (Selected) **\$490k**
"Contributions of glaciers to sea level rise over the past half-century" with **Alex Gardner**
(PI, Clark University), Mike Willis (co-I, Cornell University), Zachary Moratto (co-I,
NASA Ames Research Center)

GRANTS (PENDING)

JPL TOPIC AREA PROPOSAL FOR THE RESEARCH AND TECHNOLOGY DEVELOPMENT FUND **\$254k**
"Land Ice Changes using CryoSat-2 Data" with **Alex Gardner** (acting lead, JPL), Erik Ivins
(PI, JPL), Eric Larour (co-I, JPL)

ICESAT2 SCIENCE DEFINITION TEAM **\$235k**
"Improved interpretation of ICESat-2 data through characterization of multiple scattering
of the laser micropulse" with **Alex Gardner** (PI, JPL)

TEACHING EXPERIENCE (SPRING/FALL YEAR: UNDERGRADUATE/GRADUATE ENROLMENT)

REMOTE SENSING OF THE CRYOSPHERE (S14: 3/17)
Graduate School of Geography, Clark University
Undergraduate/graduate course covering satellite observation methods and analysis
for cryosphere monitoring including laser altimetry, gravimetry, multi-spectral
imagery, microwave radiometry, and radar.

EARTH SYSTEM SCIENCE (S14: 75/0)
Graduate School of Geography, Clark University
Undergraduate course introducing the structure and function of the Earth System.
Topics covered included weather, climate, atmosphere and ocean circulation,
hydrologic cycle, water resources, tectonics, and land-surface processes.

INTRODUCTION TO REMOTE SENSING (F12: 15/21, F13: 19/26)
Graduate School of Geography, Clark University
Undergraduate/graduate course covering the principles and analytical methods of
satellite remote sensing as applied to environmental systems.

INTRODUCTION TO QUANTITATIVE METHODS (S13: 22/2)
Graduate School of Geography, Clark University
Undergraduate/graduate course focused on statistical methods.

DIRECTED STUDY: ADVANCED TOPICS IN CRYOSPHERIC SCIENCES (S12: 1/1, F13: 1/1, S14: 2/1)
Graduate School of Geography, Clark University
Undergraduate/graduate directed study covering a wide range of advanced cryosphere
and earth system science topics.

INVITED INSTRUCTOR: INTERNATIONAL SUMMER SCHOOL IN GLACIOLOGY (S12: 0/27)
Geophysical Institute, University of Alaska, Fairbanks
Graduate seminar on methods for determining glacier mass change from space.

GUEST LECTURER: ATMOSPHERIC MODELING (S10)
Department of Earth and Atmospheric Sciences, University of Alberta
Three undergraduate/graduate lectures introducing scientific computing for climate
research.

GUEST LECTURER: ICE DYNAMICS & GLACIER HYDROLOGY (F09)
Department of Earth and Atmospheric Sciences, University of Alberta
Three graduate lectures covering glacier surface mass and energy exchanges

TEACHING ASSISTANT: PLANET EARTH (F09)

Department of Earth and Atmospheric Sciences, University of Alberta

Instruction and grading of 10 labs introducing the origins and evolution of the Earth and the solar system.

SERVICE AND PUBLIC OUTREACH

CONTRIBUTING AUTHOR TO CHAPTER 4 (OBSERVATIONS: CRYOSPHERE) AND CHAPTER 13 (SEA LEVEL CHANGE) OF THE IPCC WORKING GROUP 1, FIFTH ASSESSMENT REPORT

Contributed to the synthesis of global glacier mass change estimates and to the evaluation of projections of glacier change.

BOARDS

Advisory Board member of the International Association of Cryospheric Sciences (IASC) Global Terrestrial Network - for Glaciers GTN-G) (2014-present)

MISSION REVIEW

NASA mission review panelist (2013/14)

SCIENCE TEAMS

NASA Sea Level Change Team (2014-2017)

Team member of Mission to Understand Ice Retreat (MUIR) led by NASA's Jet Propulsion Laboratory (2014-present)

REVIEWER FOR SCIENTIFIC JOURNALS

Reviewer for Nature, Science, Nature Climate Change, Nature Geoscience, Geophysical Research Letters, Environmental Research Letters, Journal of Geophysical Research (Earth Surface and Atmospheres), Water Resources Research, The Cryosphere, PLOS ONE, Journal of Applied Meteorology and Climatology, International Journal of Climatology, Journal of Glaciology, Polar Research, Water Science and Technology, Remote Sensing, and Arctic, Antarctic, and Alpine Research.

REVIEWER OF GRANTS APPLICATIONS

NASA Panelist (Earth and Space Science Fellowship Program; Modeling, Analysis and Prediction program, Cryosphere Program), and reviewer for the National Science Foundation (Arctic Natural Sciences Program; Antarctic Integrated System Science; Geography and Spatial Sciences Program), Icelandic Centre for Research, Netherlands Organization for Scientific Research: Earth and Life sciences, French Polar Institute (IPEV, Arctic Program), and the Swiss National Science Foundation (Div. Mathematics, Physical and Engineering Sciences).

UNIVERSITY COMMITTEES

Web Committee Chair, Graduate School of Geography, Clark University, (2013/14)

Undergraduate Student Committee Member, Graduate School of Geography, Clark University, (2012/14)

WORKING GROUPS

NASA Cryospheric Sciences Program's SURface Mass Balance and snow on sea ice (SUMup) Working Group (2012-present)

NASA Snow Working Group (2013-present)

CONVENER OF AMERICAN GEOPHYSICAL UNION (AGU) FALL MEETING SCIENTIFIC SESSIONS

The Changing Cryosphere (December 2012)

Cryosphere-Atmosphere Energy Exchanges: Advances in Modeling and Observation. (December 2011)

MEDIA INTERVIEWS AND RESEARCH COVERAGE

TV interview with Al Jazeera English. Radio interviews with the Canadian Broadcasting Corporation (CBC) program "Quirks and Quarks", CBC national news, Germany's Deutschlandfunk radio, and CKLB (NT, Canada) program "Ends of the Earth". Print interviews with the New York Times, MSNBC, Science News (USA), The Christian Science Monitor (USA), New Scientist, Postmedia News (Canada), American Geophysical Union, and LiveScience (USA). My research has been featured as NASA's Earth Observatory Image of the Day and by more than 50 media outlets across the globe including BBC News, Reuters, Bloomberg, MSNBC, USA Today, the Vancouver Sun, Discovery News, Huffington Post, and New Scientist.

CONFERENCE COORDINATOR

Organized registration, accommodation and transport for the Workshop on Arctic Glaciers, Kananaskis, Alberta (2009)

OUTREACH

Judged student presentations and posters for the American and Michigan Geophysical Unions. Delivered educational talks at elementary schools (ages 8-12) on topics of climate change and alternative energy, volunteered as a science fair 'expert advisor' for junior high students (ages 11-14), and was an exhibit coordinator for Spectrum 2005 at the University of Saskatchewan.

FIELD RESEARCH EXPERIENCE

11 weeks of research experience conducting scientific measurements in remote and extreme Arctic environments. Through these research expeditions I acquired invaluable collaboration, leadership, and logistical planning skills that I could not have learned elsewhere. I also gained technical expertise in erecting satellite transmitting weather stations, conducting dynamic and static GPS surveys, logging snow stratigraphies and ice cores, monitoring firn compaction rates, setting up time lapse camera networks, drilling shallow ice cores, and carrying out dye tracing experiments.

RESEARCH AND ACADEMIC ADVISING

- Arthur Elmes, Committee, Clark University (Ph.D., expected 2017)
- Lucas Earl, Chair, Clark University (M.Sc., 2015)
- Christopher Ferraro, Chair, Clark University (M.Sc., 2014)
- Lucas Earl, Honors Advisor, Clark University (B.A., 2014)
- Emily Collier, Honors Committee 2013, Clark University (B.A., 2013)
- Aku Riihelä, External Examiner, Aalto University, Finland (Ph.D. 2013)

PRESENTATIONS (INVITED)

Gardner, A. S., 2014. Glaciers and sea level rise, 2014. University of Innsbruck. Innsbruck, Austria. Invited Oral Presentation.

Gardner, A. S., G. Moholdt, J. G. Cogley, B. Wouters, J. Wahr, 2014. Improved estimates of the global glacier contribution to sea level rise, European Geophysical Union. Vienna, Austria. Invited Oral Presentation.

Gardner, A. S., 2013. Out of Equilibrium in a Warming World: Glacier Wastage and Sea Level Rise, Bromery Lecture, Johns Hopkins University. Baltimore, MD, USA. Invited Oral Presentation.

Gardner, A. S., 2013. Global glacier contributions to sea level rise, NASA Goddard Space Flight Center, Greenbelt, MD, USA. Invited Oral Presentation.

- Gardner, A. S.**, 2013. Out of equilibrium in a warming world: using ICESat, GRACE and in situ observations to quantify global glacier contributions to sea level rise, Science Visitor and Colloquium Program, NASA's Jet Propulsion Laboratory. Pasadena, CA, USA. Invited Oral Presentation.
- Gardner, A. S.**, 2013. Observing glacier change from space, New England - Saint Lawrence Valley Geographical Society, Clark University. Worcester, MA, USA. Invited Oral Presentation.
- Gardner, A. S.**, 2013. Global glacier contributions to sea level rise. Sherbrook University, Sherbrook, Quebec, Canada. Invited Oral Presentation.
- Gardner, A. S.**, 2013: Surface mass budget of Canadian Arctic Glaciers. SURface Mass Balance and snow on sea ice (SUMup) Working Group meeting, NASA Goddard Space Flight Center, Greenbelt, MD, USA. Invited Oral Presentation.
- Gardner, A. S.**, 2013. Out of Equilibrium in a Warming World: Glacier Wastage and Sea Level Rise, Marsh Lecture Series, Clark University. Worcester, MA, USA. Invited Oral Presentation.
- Gardner, A. S.**, G. Moholdt, J. G. Cogley, B. Wouters and J. Wahr, 2013: Global contribution of glacier wastage to sea level rise. Ice2sea North/South glacier workshop. Copenhagen, Denmark. Invited Oral Presentation.
- Gardner, A. S.**, 2013: Global contribution of glacier wastage to sea level rise. Ice2sea North/South glacier workshop. Copenhagen, Denmark. Invited Oral Presentation.
- Gardner, A. S.**, 2012: Surface mass budget of Canadian Arctic Glaciers. SURface Mass Balance and snow on sea ice (SUMup) Working Group meeting, NASA Goddard Space Flight Center in Greenbelt, MD, USA. Invited Oral Presentation.
- Gardner, A. S.**, 2012: Glaciers and Sea Level Rise, Department of Atmospheric & Environmental Sciences, University at Albany, SUNY, NY, USA. Invited Oral Presentation.
- Gardner, A. S.**, 2011: How much are glaciers contributing to Sea Level, Clark Graduate School of Geography, Clark University, Worcester, MA, USA. Invited Oral Presentation.
- Gardner, A. S.**, 2010: Melting of Glaciers and Ice Sheets: Towards Improved Estimates. Atmospheric, Oceanic, and Space Science Department Winter Seminar Series, University of Michigan, Ann Arbor, Michigan, USA. Invited Oral Presentation.

PRESENTATIONS

- Gardner, A. S.**, G. Moholdt, J. G. Cogley, B. Wouters and J. Wahr, 2013: Glacier Contributions to Sea Level Rise: 2003-2009, NASA Program for Arctic Regional Climate Assessment annual meeting, Greenbelt, MD, USA. Oral Presentation.
- Gardner, A. S.**, G. Moholdt, J. G. Cogley, A. A. Arendt, J. Wahr: Narrowing the gap: A consensus estimate of glacier mass wastage for 2003-09. 2012 American Geophysical Union Fall Meeting, San Francisco, California, USA. Poster Presentation.
- Gardner, A. S.**, G. Moholdt, B. Wouters, A. Arendt, 2011: Canadian Arctic Archipelago Glacier Contributions to Sea Level: 1950-2011. 2011 American Geophysical Union Fall Meeting, San Francisco, California, USA. Oral Presentation.
- Gardner, A. S.**, G. Moholdt, J. G. Cogley, B. Wouters and J. Wahr, 2013: Glacier Contributions to Sea Level Rise: 2003-2009, NASA Program for Arctic Regional Climate Assessment annual meeting, Greenbelt, MD, USA. Oral Presentation.

- Gardner, A. S.** and M. G. Flanner. The need for improving the simulation of glacier surface energy and mass budgets within CESM. 2011: Community Earth Systems Model Annual Workshop, Breckenridge, Colorado, USA. Oral Presentation.
- Gardner, A. S.**, G. J. Wolken, M. J. Sharp, G. Moholdt, B. Wouters, D. O. Burgess, J. G. Cogley: Estimating the mass change of Canadian High Arctic glaciers (1949-2010). 2010 American Geophysical Union Fall Meeting, San Francisco, California, USA. Oral Presentation.
- Gardner, A. S.** and M. Sharp, 2009: Parameterization of Shortwave Absorption and Reflection by Snow and Ice. 2009 American Geophysical Union Fall Meeting, San Francisco, California, USA. Oral Presentation.
- Gardner, A. S.**, 2009: Snow Albedo. ATLAS Symposium, Edmonton, AB, Canada. Oral Presentation.
- Gardner, A. S.**, 2009: Parameterization of Shortwave Absorption and Reflection in Snow and Ice. IASC Workshop on the dynamics and mass budget of Arctic glaciers, Kananaskis Country, AB, Canada. Oral Presentation.
- Gardner, A. S.**, and M. Sharp, 2008: The importance of including variable near-surface temperature lapse rates when employing the degree-day method to estimate glacier melt. Workshop on Mass Balance Measurements and Modelling, Skeikampen, Norway. Oral Presentation.
- Gardner, A. S.**, 2007: Meteorological and climatic influences on Canadian high Arctic glacier surface melt. CSA-CCI Northern Research Day, Edmonton, AB. Oral Presentation.
- Gardner, A. S.**, and M. Sharp, 2006: Influence of Variability in the Circumpolar Vortex on the Mass Balance of Canadian High Arctic Glaciers. Geological Association of Canada - First Open Scientific Meeting of the Polar Climate Stability Network, Montréal, QC. Oral Presentation. **(Honorable Mention from the Geological Association of Canada)**
- Gardner, A. S.**, and M. Sharp, 2006: Influence of the Arctic Circumpolar Vortex on the Mass Balance of Canadian high Arctic Glaciers. Eighth Symposium on Research in Geosciences, Edmonton, AB. Oral Presentation.
- Gardner, A. S.**, M. Sharp, 2006: Can Stratospheric Ozone Loss Influence Arctic Glacier Surface Mass Balance? CSA-CCI Northern Research Day, Edmonton, AB. Oral Presentation.
- Gardner, A. S.**, M. Sharp, 2006: Synoptic-Scale Climatic Variability and Glacier Mass Balance of the Queen Elizabeth Islands. Canadian Geophysical Union Hydrology Section Fourth Annual Student Meeting, Edmonton, AB. Oral Presentation.
- Gardner, A. S.**, and M. Sharp, 2005: Influence of Atmospheric Circulation Changes on Canadian High Arctic Glaciers. Second ArcticNet Annual Scientific Meeting, Banff, AB. Poster Presentation.
- Gardner, A. S.**, and M. Sharp, 2005: Climatic Influences on the Mass Balance of Canadian high Arctic Glaciers. Seventh Symposium on Research in Geosciences, Edmonton, AB. Oral Presentation.